

Abstract

The invention is based on a coolant circuit (10) with at least one heat source (12), a radiator (14), and a bypass line (22), which connects a radiator inlet (18) to a radiator return (20) and whose junction (24) has a control valve (26) disposed in it, whose throttle body (58) can be electrically triggered as a function of operating parameters and environmental parameters by means of at least one control unit (40, 42) and divides the coolant flow between the radiator inlet (18) and the bypass line (22).

It is proposed that according to a characteristic curve of the control valve (26), the control unit (40, 42) determine a set-point value (50) for the position of the throttle body (58), which sets a ratio of the radiator volume flow to the total coolant flow at the control valve (26) which equals the ratio between the difference of a temperature at the outlet (36) of the bypass line (22) minus a set-point temperature at the inlet of the heat source (12) and the difference of the temperature at the outlet (36) of the bypass line (22) minus a temperature at the outlet of the radiator (14), where the ratio of the radiator volume flow to the total coolant flow is set equal to zero when there is a negative value and is limited to one when there is a value greater than one.

(Fig. 1)

Reference Numerals

10	coolant circuit	52	actual value
12	heat source	54	input signal
14	radiator	56	set-point value generator
16	coolant line	58	throttle body
18	radiator inlet	60	valve body
20	radiator return	62	drive shaft
22	bypass line	64	rotation axis
24	junction	66	connection
26	control valve	68	connection
28	coolant pump	70	helical spring
30	temperature sensor	72	distributor conduit
32	temperature sensor	74	sealing ring
34	temperature sensor	76	sleeve
36	outlet	78	arrow
38	fan	80	signal line
40	first control unit	82	circumference surface
42	second control unit	84	circumference surface
44	drive mechanism		
46	position measuring device		
48	actuator		
50	set-point value		